

IN THE CLAIMS:

Claim 1 (canceled).

Claim 2 (currently amended): A heat emitting probe comprising:

a conductive carbon nanotube probe needle with a base end portion thereof fastened to a holder and a tip end portion thereof protruding from said holder,

a heat emitting body provided on a circumferential surface of said conductive carbon nanotube probe needle,

a conductive carbon nanotube lead wire whose one end is fastened to said heat emitting body, and

a means for causing an electric current to pass through ~~both ends of~~ said heat emitting body by applying a voltage between said conductive carbon nanotube lead wire and said conductive carbon nanotube probe needle, ~~wherein an electric current is caused to pass through so that said heat emitting body is heated by said electric current.~~

Claim 3 (previously presented): The heat emitting probe according to Claim 2, wherein:

a protruding portion formed on a cantilever portion of an atomic force microscope (AFM) cantilever is employed as said holder; and

said means for causing said electric current to pass through is comprised of

two electrode films which are provided on said cantilever portion,

one end of said conductive carbon nanotube lead wire which is connected to one of said electrode films, and

said conductive carbon nanotube probe needle which is connected to another of said electrode films, wherein

said electric current is caused to pass between said electrode films.

Claim 4 (previously presented): The heat emitting probe according to Claim 2, wherein:

a protruding portion formed on a cantilever portion of an atomic force microscope (AFM) cantilever is employed as said holder; and

said means for causing said electric current to pass through is comprised of

two electrode films which are provided on said cantilever portion,

one end of said conductive carbon nanotube lead wire which is connected to one of said electrode films, and

another conductive carbon nanotube lead wire by which said conductive carbon nanotube probe needle is connected to another of said electrode films, wherein said electric current is caused to pass between said electrode films.

Claim 5 (previously presented): A heat emitting probe apparatus comprising:
said heat emitting probe according to Claim 2, 3 or 4,
a scanning mechanism that allows a tip end of said conductive carbon nanotube probe needle of said heat emitting probe to scan over a sample, and
a control circuit which passes an electric current through said tip end of said conductive carbon nanotube probe needle, wherein
said tip end of said conductive carbon nanotube probe needle scans a surface of a sample.

Claim 6 (previously presented): The heat emitting probe apparatus according to Claim 5, wherein

said sample is a thermal recording medium, and
said tip end of said conductive carbon nanotube probe needle is heated by said heat emitting body, and wherein
information is recorded by means of a hole pattern formed in a surface of said thermal recording medium.

Claim 7 (canceled).

Claim 8 (canceled).